

**CLAIMS**

What is claimed is:

- 5           1.       A method of cutting segments to desired lengths from a strip of elastomeric material, the segments has a width W, the elastomeric strip being formed of a plurality tire components, at least one of the tire components being a cord reinforced component, the cords being substantially parallel and oriented in the direction of a cutting path formed across the width W of the strip; the method comprising:
- 10                 moving on ultrasonic knife into cutting engagement of the elastomeric strip while supporting the strip along the cutting path;  
                      cutting the segment at a skive angle  $\alpha$ ; and  
                      impacting a cord of the cord reinforced component lifting said cord over the ultrasonic knife as the segment is being cut, the impacted cord being at a cut
- 15                 end adjacent the cutting path.
2.       The method of cutting segments of claim 1 further comprises the step of: orienting a cutting edge on the ultrasonic knife inclined at an acute angle  $\beta$  relative to the strip cutting path.
- 20                 3.       The method of cutting segments of claim 1 further comprises the steps of movably restraining the strip ahead of the cutting.
4.       The method of cutting segments of claim 1 wherein the steps of
- 25                 supporting the strip including supporting the strip at an angle  $\theta_1$ , less than the skive angle  $\alpha$  on one side of the cutting path and an angle  $\theta_2$  greater than the skive angle  $\alpha$  on the opposite side of the cutting path.
5.       The method of cutting segments of claim 4, wherein the location of the impacted cord occurs approximately at the location wherein the supporting angle
- 30                 changes for  $\theta_1$  to  $\theta_2$ .

6. The method of claim 2 further comprises the step of positioning the cutting edge of the ultrasonic knife at a gap distance (d) above the strip slightly less than or slightly to the greater than thickness of the cord reinforced component.

5 7. The method of claim 6 wherein the step of cutting further includes cutting the segment wherein a plurality of cords are beneath and adjacent a flat cut surface.

8. A segment formed by the method of claim 1 comprises a first cut end; the first cut end having a cut splicing surface extending outward from the cord reinforced  
10 component.

9. The segment of claim 8 wherein the first cut end and second cut end form a lap splice joint having one or more over lapping cords adjacent a flat cut surface.

15 10. An apparatus for cutting segments from a strip of multi-layered elastomeric material containing reinforcing cords, the cords being substantially parallel and more or less oriented in the direction of a cut path, the apparatus characterized by:

(a) a cutting element for cutting the strip to form cut ends, the cutting element having a cutting edge oriented to cut along a line, the line being tangent  
20 to one or more cords and inclined at a desired skive angle  $\alpha$ ;

(b) a means for supporting the strip along the cutting path, the means for supporting having a first surface oriented at an angle  $\theta_1$  less than the skive angle  $\alpha$  and a second surface oriented at an angle  $\theta_2$  greater than or equal to the skive angle  $\alpha$ ;

25 (c) a means for restraining the strip against the means for supporting the means or restraining being located ahead of the cutting element; and

(d) a means for moving the cutting element and the means for restraining.

11. The apparatus for cutting wherein the cutting element has the cutting edge inclined at an acute angle  $\beta$  relative to the width, the cutting edge oriented to initiate cutting on the surface furthest away from the means for supporting the strip.
- 5 12. The apparatus of claim 10 wherein the skive angle  $\alpha$  is about  $10^\circ$  or less adjacent the one or more cords.
13. The apparatus of claim 12 wherein the angle  $\theta_1$ , is about  $2^\circ$  less than  $\alpha$ .
- 10 14. The apparatus of claim 13 wherein the angle  $\theta_2$  is about  $2^\circ$  more than  $\alpha$ .
- 15 15. The apparatus of claim 13 wherein  $\alpha$  is about  $8^\circ$ .
16. The apparatus of claim 10 wherein the cutting element is an ultrasonic knife.
17. The apparatus of claim 16 wherein the cutting element has a flat or planar surface adjacent the supporting means.
- 20 18. The apparatus of claim 17 wherein the cutting element has a wedge shape increasing in thickness from the cutting edge.
19. The apparatus of claim 10 wherein the means for supporting the strip include a vacuum means for adhering the strip to the means for supporting.